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## Recent BABAR Studies of Bottomonium States

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We present a study of the radiative transitions from decays of the  $Y(2S)$  and  $Y(3S)$  resonances using photons that have converted into an  $e^+e^-$  pair, obtaining precise measurements of the branching fractions for  $\chi_{b1,2}(1, 2P) \rightarrow \gamma Y(1S)$  and  $\chi_{b1,2}(2P) \rightarrow \gamma Y(2S)$  transitions and search for radiative decay to the  $\eta_b(1S)$  and  $\eta_b(2S)$  states. We present a search for the spin-singlet partner of the  $\chi_{bJ}(1P)$  triplet, the  $h_b(1P)$  state of bottomonium in the transitions  $Y(3S) \rightarrow \pi^0 h_b$  and  $Y(3S) \rightarrow \pi^+\pi^- h_b$  using a data sample of 122 million  $Y(3S)$  events.

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